CLAIMS

We claim:

1. A targeting construct comprising:

    (a) a first polynucleotide sequence homologous to at least a first portion of a TRP6 gene;

    (b) a second polynucleotide sequence homologous to at least a second portion of the TRP6 gene; and

    (c) a selectable marker.

2. A method of producing a targeting construct, the method comprising:

    (a) providing a first polynucleotide sequence homologous to at least a first portion of a TRP6 gene;

    (b) providing a second polynucleotide sequence homologous to at least a second portion of the TRP6 gene;

    (c) providing a selectable marker; and

    (d) inserting the first sequence, second sequence, and selectable marker into a vector to produce the targeting construct.

3. A cell comprising a disruption in a TRP6 gene.

4. The cell of claim 3, wherein the cell is a murine cell.

5. The cell of claim 4, wherein the murine cell is an embryonic stem cell.

6. A non-human transgenic animal comprising a disruption in a TRP6 gene.

7. The non-human transgenic animal of claim 6, wherein the transgenic animal is a mouse.

8. A cell derived from the transgenic mouse of claim 7.

9. A method of producing a transgenic mouse comprising a disruption in a TRP6 gene, the method comprising:

    (a) introducing the targeting construct of claim 1 into a cell;

    (b) introducing the cell into a blastocyst;

    (c) implanting the resulting blastocyst into a pseudopregnant mouse, wherein said pseudopregnant mouse gives birth to a chimeric mouse; and

    (d) breeding the chimeric mouse to produce the transgenic mouse.

10. A method of identifying an agent that modulates the expression or function of a TRP6 gene, the method comprising:

    (a) providing a non-human transgenic animal comprising a disruption in the TRP6 gene;

    (b) administering the agent to the non-human transgenic animal; and

    (c) determining whether the expression or function of the disrupted TRP6 gene in the non-human transgenic animal is modulated.

11. A method of identifying an agent that modulates the expression or function of a TRP6 gene, the method comprising:

    (a) providing a cell comprising a disruption in the TRP6 gene;

    (b) contacting the cell with the agent; and

    (c) determining whether the expression or function of the TRP6 gene is modulated.

12. The method of claim 11, wherein the cell is derived from the non-human transgenic animal of claim 6.

13. An agent identified by the method of claim 10 or claim 11.

14. A transgenic mouse comprising a disruption in a TRP6 gene, wherein there is no significant expression of the TRP6 gene in the transgenic mouse.

15. A cell derived from the transgenic mouse of claim 14.

16. A transgenic mouse comprising a disruption in a TRP6 gene, wherein the transgenic mouse exhibits an increased pain threshold, relative to wild-type control mice.

17. The transgenic mouse of claim 16, wherein the increased pain threshold is characterized by an increased response latency on a hot plate test.

18. A method of identifying an agent that ameliorates a phenotype associated with a disruption in a TRP6 gene, the method comprising:

    (a) administering an agent to a transgenic mouse comprising a disruption in the TRP6 gene; and

    (b) determining whether the agent ameliorates the phenotype.

19. The method of claim 18, wherein the phenotype is an increased pain threshold.

20. An agent identified by the method of claim 19.

21. An agonist or antagonist of TRP6.

22. Phenotypic data associated with a transgenic mouse comprising a disruption in a TRP6 gene, wherein the phenotypic data is in an electronic database.